

**A MULTIPLE ENDPOINT STUDY OF RADIATION DAMAGE
IN CHERNOBYL CLEANUP WORKERS; R.G. Langlois*¹,**

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Large numbers of people were involved in cleanup work after the Chernobyl nuclear power plant accident in 1986. While radiation exposures for these workers were intended to be limited to ≤ 25 cGy, there remains considerable uncertainty about the magnitude of the doses this population received. Three measures of somatic genetic damage are being evaluated for their individual and collective ability to quantify radiation exposure. The three assays are: stable chromosome aberrations in lymphocytes detected by fluorescence in situ hybridization; glycophorin A mutations detected in erythrocytes using flow cytometry, and hypoxanthine phosphoribosyltransferase (HPRT) mutations in lymphocytes detected by cell culture. Approximately 200 people, including Russian cleanup workers and Russian controls, have been studied. Results from all three assays are consistent with radiation damage in cleanup workers, but the mean level of damage appears smaller than expected from the official Russian dose estimates. The order of sensitivity of the assays for detecting radiation damage in this population is: chromosome aberrations > HPRT mutants > glycophorin mutants. These ongoing studies are designed to determine the optimal deployment of these assays in populations with potential low-dose radiation exposures. (Work by LLNL under the auspices of US DOE contract W-7405-ENG-48 with support from P01-CA59431.)